

## CLAIMS

What is claimed is:

5 1. A method for setting up a call within a wireless communication system, wherein the wireless communication system is deployed to provide call services to mobile stations (MS) operating in a private network, the method comprising the steps of:

receiving a request at a mobile station to originate a special call services (SCS) call, the SCS call specifying a private service that is specially supported by the private  
10 network;

coding a service type field in a request message to specify the SCS call; and

15 sending the request message from the mobile station to base station equipment for call setup within the private network.

20 2. A method as in claim 1 wherein the wireless communication system operates according to certain functional layers, including a radio resource (RR) functional layer (RR), a mobility management (MM) functional layer, and a connection management (CM) functional layer, with at least the radio resource functional layer being normally assumed to be a transport mechanism for the mobility management and connection management layer functions.

3. A method as in claim 2 wherein the wireless communication system is a Global System for Mobile (GSM) system.

25 4. A method as in claim 3 wherein the service type field in the SCS request message is defined using reserved GSM service type codes.

5. A method as in claim 2 wherein the service request message is coded at a mobility management (MM) layer.

6. A method as in claim 2 wherein the radio resource (RR) functional layer additionally performs the steps of:  
detecting a newly added special call services (SCS) causes request; and  
granting physical resources to service a request depending upon the SCS cause type and a state of other call types already in process.

7. A method as in claim 6 wherein the step of granting physical resources additionally comprises the steps of:  
dropping a normal call-in-process in order to accommodate the SCS call if there are no other free physical resources left; and  
prioritizing SCS calls in progress.

8. A method as in claim 6 wherein the step of granting physical resources additionally comprises the step of:  
allocating radio resources to the call that are reserved in advance for servicing SCS calls.

9. A method as in claim 1 wherein the private service specific call is a private emergency call.

10. A method as in claim 1 wherein the request message is a channel request message.

11. A method as in claim 1 wherein the request message is a service request message.

5 12. A method as in claim 1 additionally comprising the step of:  
maintaining an SCS cause table that maps dialed numbers to SCS causes; and  
upon receiving a request at the mobile station to originate a call, looking up a  
dialed number in the SCS cause table to determine if the call request can be request as  
an SCS call.

10 13. In a wireless communication system deployed to provide call services to mobile  
stations (MS) operating in a private network, an apparatus for setting up a call  
comprising:

15 a user interface, for receiving a request at a mobile station to originate a special  
call services (SCS) call, the SCS call specifying a private service that is specially  
supported by the private network;

a message coder, for coding a service type field in a request message to specify  
the SCS call; and

20 a transmitter, for sending the request message from the mobile station to base  
station equipment for call setup within the private network.

25 14. An apparatus as in claim 13 wherein the wireless communication system  
operates according to certain functional layers, including a radio resource (RR)  
functional layer (RR), a mobility management (MM) functional layer, and a connection  
management (CM) functional layer, with at least the radio resource functional layer

being normally assumed to be a transport mechanism for the mobility management and connection management layer functions.

15. An apparatus as in claim 14 wherein the wireless communication system is a  
5 Global System for Mobile (GSM) system.

16. An apparatus as in claim 15 wherein the service type field in the SCS request message is defined using reserved GSM service type codes.

10 17. An apparatus as in claim 14 wherein the service request message is coded at a mobility management (MM) layer.

18. An apparatus as in claim 14 wherein the radio resource (RR) functional layer additionally comprises:

15 a receiver, for receiving a newly added special call services (SCS) causes request; and

a physical resource manager, that service a request depending upon the SCS cause type and a state of other call types already in process.

20 19. An apparatus as in claim 18 wherein the physical resource manager additionally drops a normal call-in-process in order to accommodate the SCS call if there are no other free physical resources left.

25 20. An apparatus as in claim 18 wherein the physical resource manager additionally allocates radio resources to the call that are reserved in advance for servicing SCS calls.

21. An apparatus as in claim 13 wherein the private service specific call is a private emergency call.

22. An apparatus as in claim 13 wherein the request message is a channel request message.

23. An apparatus as in claim 13 wherein the request message is a service request message.

24. An apparatus as in claim 13 additionally comprising:

an SCS cause table that maps dialed numbers to SCS causes, such table being used, upon receiving a request at the mobile station to originate a call, for looking up a dialed number in the SCS cause table to determine if the call request can be request as an SCS call.

25. A computer program product for setting up a call within a wireless communication system, wherein the wireless communication system is deployed to provide call services to mobile stations (MS) operating in a private network, the computer program product comprising a computer usable medium having computer readable code thereon, comprising computer code which:

receives a request at a mobile station to originate a special call services (SCS) call, the SCS call specifying a private service that is specially supported by the private network;

codes a service type field in a request message to specify the SCS call; and

sends the request message from the mobile station to base station equipment for call setup within the private network.

26. A computer program product as in claim 25 wherein the wireless communication system operates according to certain functional layers, including a radio resource (RR) functional layer (RR), a mobility management (MM) functional layer, and a connection management (CM) functional layer, with at least the radio resource functional layer being normally assumed to be a transport mechanism for the mobility management and connection management layer functions.

27. A computer program product as in claim 25 wherein the wireless communication system is a Global System for Mobile (GSM) system.

28. A computer program product as in claim 27 wherein the service type field in the SCS request message is defined using reserved GSM service type codes.

29. A computer program product as in claim 26 wherein the service request message is coded at a mobility management (MM) layer.

30. A computer program product as in claim 26 wherein the computer code contains a radio resource (RR) functional layer which:

detects a newly added special call service (SCS) causes request; and

grants physical resources to service a request depending upon the SCS cause type and a state of other call types already in process.

31. A computer program product as in claim 30 wherein the computer code additionally:

5 drops a normal call-in-process in order to accommodate the SCS call if there are no other free physical resources left; and prioritizes SCS calls in progress.

32. A computer program product as in claim 30 wherein the computer code additionally:

10 allocates radio resources to the call that are reserved in advance for servicing SCS calls.

33. A computer program product as in claim 25 wherein the private service specific call is a private emergency call.

15 34. A computer program product as in claim 25 wherein the request message is a channel request message.

35. A computer program product as in claim 25 wherein the request message is a service request message.

20 36. A computer program product as in claim 25 wherein the computer code additionally:

maintains an SCS cause table that maps dialed numbers to SCS causes; and upon receiving a request at the mobile station to originate a call, looks up a  
25 dialed number in the SCS cause table to determine if the call request can be request as an SCS call.

37. In a wireless communication system deployed to provide call services to mobile stations (MS) operating in a private network, an apparatus for setting up a call comprising:

5 means for receiving a request at a mobile station to originate a special call services (SCS) call, the SCS call specifying a private service that is specially supported by the private network;

means for coding a service type field in a request message to specify the SCS call; and

10 means for sending the request message from the mobile station to base station equipment for call setup within the private network.

38. An apparatus as in claim 37 wherein the wireless communication system operates according to certain functional layers, including a radio resource (RR) functional layer (RR), a mobility management (MM) functional layer, and a connection management (CM) functional layer, with at least the radio resource functional layer being normally assumed to be a transport mechanism for the mobility management and connection management layer functions.

39. An apparatus as in claim 38 wherein the wireless communication system is a Global System for Mobile (GSM) system.

40. An apparatus as in claim 39 wherein the service type field in the SCS request message is defined using reserved GSM service type codes.



41. An apparatus as in claim 38 wherein the service request message is coded at a mobility management (MM) layer.

42. An apparatus as in claim 38 wherein the radio resource (RR) functional layer additionally comprises:

means for detecting a newly added special call services (SCS) causes request;

and

means for granting physical resources to service a request depending upon the SCS cause type and a state of other call types already in process.

43. An apparatus as in claim 42 wherein the means for granting physical resources additionally comprises:

means for dropping a normal call-in-process in order to accommodate the SCS call if there are no other free physical resources left; and

means for prioritizing SCS calls in progress.

44. An apparatus as in claim 42 wherein the means for granting physical resources additionally comprises:

means for allocating radio resources to the call that are reserved in advance for servicing SCS calls.

45. An apparatus as in claim 37 wherein the private service specific call is a private emergency call.

46. An apparatus as in claim 37 wherein the request message is a channel request message.

47. An apparatus as in claim 37 wherein the request message is a service request message.

5 48. An apparatus as in claim 37 additionally comprising:

means for maintaining an SCS cause table that maps dialed numbers to SCS causes; and

means for, upon receiving a request at the mobile station to originate a call, looking up a dialed number in the SCS cause table to determine if the call request can be request as an SCS call.

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